

Service Use Among Adolescents With Comorbid Mental Health and Substance Use Disorders

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Abstract

Using the National Adolescent and Treatment Study (NACTS; Greenbaum et al., 1996) longitudinal database, this study explored whether adolescents with comorbidity had different service utilization rates than those with only a mental health disorder. Participants were 668 children (75% male, aged 9-17 years at the beginning of the study [$M = 13.44$, $SD = 2.27$], 72% white, 20% African American, and 8% Hispanic and other) and their caretakers. Receipt of 11 different services from the following five service areas were examined: (a) mental health (i.e., psychological testing, individual counseling, family counseling, group therapy, alcohol and drug counseling, psychotropic medication), (b) education (i.e., special education classes, speech therapy), (c) vocational rehabilitation, (d) nonroutine health care (e.g., doctor visits, emergency room), and (e) criminal justice (i.e., police contact). Logistic regression analyses indicated significantly ($p < .05$) higher rates of alcohol and drug counseling among the co-occurring group. However, in absolute terms, only slightly more than half (i.e., 54%) of those with co-occurrence obtained at least one alcohol or drug counseling service during the entire 6-year study period. Increased contact with law enforcement also was found among those with co-occurrence. Finally, little support was found for systems-related barriers to receiving services.

Service Use Among Adolescents with Comorbid Mental Health and Substance Use Disorders

Large numbers of adolescents with serious mental health (MH) disorders also have a co-occurring substance use (SU) disorder. Only recently, beginning with changes implemented in DSM-III that permitted multiple diagnoses and subsequent results from large-scale epidemiological field studies, has co-occurring MH and SU disorders been recognized as more the rule than the exception among those with either type of problem. For example, Greenbaum, Prange, Friedman, and Silver (1991) found that among 547 adolescents aged 12-18 years who were identified as having a DSM-III MH disorder, 22% had a co-occurring SU disorder. Other estimates have reported higher prevalence of co-occurrence; ranging from 45% to 71% (Groves, Batey, & Wright, 1986; Roehrich & Gold, 1986). Similar studies of adolescents, but among those initially identified with an SU disorder, have found even higher rates of co-occurrence, as high as 82-85% (Hovens, Cantwell, & Kiriakos, 1994; Stowell & Estroff, 1992). Unfortunately, as in all studies of prevalence based on clinical samples, completely unbiased estimates cannot be established from these samples, and currently there have been no detailed general population studies of co-occurrence among American adolescents.

Nevertheless, the few existing epidemiological studies of psychiatric disorders in the general population also have supported high co-occurrence of MH and SU, both among adults and adolescents. Kessler et al. (1996), in the National Comorbidity Study, found that co-occurring MH and SU disorders were widespread. For example, 52% of respondents with lifetime alcohol abuse or dependence diagnosis also had a lifetime mental disorder. Further, among those who had a history of both an MH and SU disorder, the first onset was preponderantly for the MH disorder. That is, 83.5% of those with co-occurrence had an initial MH disorder, 3.7% had simultaneous onset, and only 12.8% had the SU disorder occur first. When the course of these disorders was plotted by age of onset for those with a primary MH disorder, median onset for the MH disorder was 11 years of age, while median onset for the subsequent SU disorder was 21 years of age. The median difference between these onsets was 5-10 years. These results strongly support: (a) a clear temporal sequence among most individuals who experienced co-occurrence, (b) the characteristic start of the co-occurrence pattern was during adolescence, and (c) the initial diagnosis was typically a MH disorder. A strong implication of these

findings has been that identification of children's MH disorders may be useful for both prevention and effective delivery of services for treatment of SU disorders.

Current concepts of mental health treatment for children and adolescents have called for integrated services from all of the child-serving systems so as to maximize treatment impact on the multiple problems that these children have (e.g., Stroul & Friedman, 1986). Benefits to be derived from an integrated approach for children with co-occurrence include a systematic perspective that provides an improved ability to recognize, assess, and treat both types of disorders as they interrelate with each other (Pettila, Foster-Johnson, & Greenbaum, 1996). Nevertheless, a number of barriers to integrated services have existed. Historically, substance use treatment (i.e., drugs, alcohol) and mental health systems have been discrete entities with minimal coordination or collaboration between them. Little information exists as to the extent that nonintegrated MH and SU services remain a barrier to receive needed services for adolescents with co-occurring disorders.

The present study used an existing research database that sampled multiple residential mental health and special education sites ($N = 121$) to explore the extent that adolescents who had been identified as having co-occurring MH and SU disorders received appropriate services. During the 1985-1991 time period when the database was collected, no integrated service systems were in operation; therefore, the data reflect service delivery as provided by nonintegrated (i.e., either separate or parallel) systems delivery models. The primary research question addressed was: Do adolescents with a MH disorder who have been served in the mental health or special education system and have a SU disorder (i.e., alcohol, marijuana) receive differential rates of services from the various child-serving agencies compared to those who have only a MH disorder, particularly with regard to alcohol and drug counseling, mental health, educational, and health services, and contact with law enforcement? It was expected that those who were comorbid would have received, at a minimum, the same levels of mental health, medical, educational, and vocational services that their non-comorbid peers received. Any reduction in services for the comorbid presumably would reflect barriers that were experienced by children whose problems cross the traditional MH or special education service provider systems. Additionally, based on need, it was expected that the comorbid would receive higher rates of alcohol and drug counseling. Finally, the

data on alcohol and drug counseling also would provide an objective measure of service penetration (i.e., the difference between service need and use) for children with co-occurring MH and SU disorders.

Method

Participants. Participants were a subset of 668 children, 75.4% males ($n = 504$) and 24.6% females ($n = 164$) females, and their families who were enrolled in the National Adolescent and Treatment Study (NACTS). Approximately half of the sample was enrolled in mental health residential facilities (47.5%) and the other half was in community-based special education programs (52.5%). NACTS was a comprehensive 7-year longitudinal study of 812 children identified with serious emotional disturbance, who, when the study began, were either in a residential mental health facility or a community-based special education program (Greenbaum, Dedrick, Friedman, Kutash, Brown, Lardieri, & Pugh, 1996). Inclusion criteria for the present study was that a participant had to have a DSM-III Axis I diagnosis (i.e., Anxiety, Depression, Conduct Disorder, Attention Deficit, Schizophrenia) when assessed at either Wave 1 ($n = 557$) or Wave 4 ($n = 483$). At the start of the study, the children were aged 9-17 years of age ($M = 13.44$, $SD = 2.27$) with 72% white, 19.9% African American, and 8.1% Hispanic or other ethnicity (e.g., Asian American, Native American).

Procedure. During Waves 1 through 6 of NACTS, each caregiver (e.g., parent, relative, professional caregiver) was asked to specify what services their child had received during the year. Receipt of 11 different services from the following five service areas were queried: (a) mental health (i.e., psychological testing, individual counseling, family counseling, group therapy, alcohol and drug counseling, psychotropic medication), (b) education (i.e., special education classes, speech therapy), (c) vocational rehabilitation, (d) nonroutine health care (e.g., doctor visits, emergency room), and (e) criminal justice (i.e., police contacts).

Measures. Rates of service utilization were measured in three ways. First, an aggregate measure of service use based on whether a child *ever received* a service during the entire 6-year period was calculated by assigning a value of 1 if a child received that service at any time during the 6-year period and an 0 if not. Second, for an 18-month period starting at Wave 1, a child was assigned a value of 1 or 0 representing whether or not a service was received during that period. Similarly, for an 18-month period starting at Wave 4, a child was assigned a value of 1 or 0 representing whether or not a

service was received. Use of these three measures provided one global and two relatively short-term measures of service use. The two short-term measures also provided some degree of comparability (i.e., both were for the same length of time) and, therefore, information on stability of service use patterns. Moreover, these measures were concurrent with when the DSM-III diagnoses were obtained. Therefore, these measures were most informative about determining the short-term relationship between service needs and service use, whereas the 6-year aggregate measure provided a long-term perspective on how children's service needs were being met.

DSM-III (American Psychiatric Association, 1980) diagnoses were derived from the Diagnostic Interview Schedule for Children (DISC-C; Costello, Edelbrock, Dulcan, Kalas, & Klaric, 1984, revised June 1985), a structured instrument administered during Waves 1 and 4 of the study. Derived diagnoses included 33 Axis I DSM-III diagnoses including alcohol and marijuana abuse/dependency. Other types of psychoactive drug use (e.g., opiates, cocaine, amphetamines, barbiturates, heroin, hallucinogens, inhalants) also were assessed. However, as pathological use, impairment, and tolerance/withdrawal symptoms for these drugs were not part of the DISC-C, no diagnoses for other drug disorders were available.

Analyses. For each type of service, comparisons of whether a child ever used that service during each of the three selected time periods were made between NACTS participants who had a comorbid MH and SU diagnoses versus those who had only an MH disorder. In this way, it was possible to determine if any significant differences existed in service use between the two groups of participants. Control variables also were entered into the analyses, which included child's age, gender, race/ethnicity and facility (residential mental health /community-based special education). These control variables were included for two reasons. First, they represented the variables that formed the stratified sampling design of the study, so by inclusion in the analyses, any group differences in service use would not be confounded with sampling differences. Second, these design variables have been identified previously as either predictors or potential predictors of the variables of interest in this study (e.g., service use, comorbidity, mental health and substance use problems). By including these variables in the analyses, any differences in service use that could be attributed to the control variables will have been removed from the test of differences between comorbid and noncomorbid groups, thereby reducing spurious

results. For all three service-use measures, which were dichotomous, logistic regression analysis was the statistical technique used to test for differences in the proportion of children in each group who ever used a service during the specified time period. In conjunction with reporting statistical significance ($\alpha = .05$), adjusted odds ratios (AOR) also are reported. The odds ratio describes the ratio between the odds of one group (e.g., co-occurring) receiving an outcome (e.g., a specific service) relative to the odds of another group (e.g., only an MH disorder) receiving the same outcome. An odds ratio of 1.00 indicates no relationship, whereas, values of 2.00 or more are interpreted as indicating a meaningful difference. Adjusted odds ratios (AOR) are odds ratios that control for the shared variance with other predictors (i.e., control variables) that have been included in the logistic regression analyses.

Results

Co-occurrence during Wave 1 and services received. Among the 557 children who had a DSM-III MH disorder when assessed at Wave 1, 21.5% ($n = 120$) had a co-occurring SU disorder (i.e., alcohol or marijuana). Table 1 displays the relative frequencies for each of the 11 services received by those with either a single or dual diagnosis. Results of the logistic regression analyses indicated that the children with a co-occurrence had received significantly higher rates of alcohol and drug counseling (43.7% vs. 12.8%, Wald $\chi^2 [1, 492] = 18.36, p < .0001$, adjusted odds ratio [AOR] = 3.20) and contact with law enforcement (66.7% vs. 36.5%, Wald $\chi^2 [1, 502] = 11.84, p < .001$, AOR = 2.37) than their peers who had only a MH disorder. None of the other services indicated significant differences by co morbidity status ($ps > .05$) or had AORs equal to or greater than 2.00.

Wave 4 co-occurrence as predictor of services received. A similar service use pattern was found for the 483 children who were assessed at Wave 4 with a MH disorder (See Table 2). Among this group, 24.8% ($n = 120$) had a co-occurring MH and SU disorder. The logistic regression analyses indicated that there were significant differences in the proportion of single versus dual disordered who received: (a) alcohol and drug counseling (16.4% vs. 30.4%, respectively, Wald $\chi^2 [1, 425] = 10.95, p < .001$, AOR = 2.58), and (b) contact with law enforcement (56.4% vs. 67.6%, respectively, Wald $\chi^2 [1, 425] = 4.56, p < .05$, AOR = 1.72). As at Wave 1, children with co-occurring MH and SU disorders received more of these services than those who had only a MH disorder. Additionally, fewer children with co-occurrence received psychotropic medication (13.7% vs. 27.1%, respectively, Wald $\chi^2 [1, 374] = 5.28, p <$

.05, AOR = 2.14) and special education classes (55.8% vs. 83.1%, respectively, Wald χ^2 [1, 258] = 6.62, $p < .05$, AOR = 2.70). No significant differences or AORs greater than or equal to 2.00 were found in the other seven services queried.

Co-occurrence as predictor of services received at any time during the 6-year study period. Among the 668 children who were assessed with a DSM-III MH disorder at either Wave 1 or Wave 4, 29.3% ($n = 196$) had a co-occurring MH and SU disorder. Results of the logistic regression analyses indicated that only for alcohol and drug counseling and contact with law enforcement was there a significant difference between the single and co-occurrence groups (See Table 3). Among those with co-occurrence, 54.1% received alcohol or drug counseling compared to 27.1% with only a MH disorder (Wald χ^2 [1, 661] = 34.52, $p < .05$, AOR = 3.09) and 81.1% had contact with law enforcement compared to 65.5% with only a MH disorder (Wald χ^2 [1, 661] = 11.83, $p < .05$, AOR = 2.13). Receipt of the other services were not significantly different or had AORs greater than or equal to 2.00 between the groups.

Discussion

Results from this study indicated a consistent pattern of greater relative frequency of alcohol and drug counseling services for children with co-occurring MH and SU disorders. Higher rates of alcohol and drug counseling among the co-occurring group suggest that the SU disorders identified during the study's assessments were appropriately reflected in the services obtained by these children. Nevertheless, in absolute terms, the penetration rate or the proportion of children who needed these services and received them was considerably lower than ideal. In the two 18-month periods that were concurrent with the assessments, less than half (i.e., 44% for Wave 1 and 30% for Wave 4) of those who could have benefited from such treatment received it. Perhaps, even more disturbing, during the entire 6-year study period, only slightly more than half (i.e., 54%) obtained at least one alcohol or drug counseling service. Arguably, in this case, the proverbial glass is half empty rather than half full.

The other consistent finding across the three selected time periods that reflects the need for more alcohol and drug counseling services was the increased contact with law enforcement among those with co-occurrence. Although the use of addictive substances and increased criminality is not a surprising finding and has been found by many other researchers, the immediate and long-term deleterious effects

of such high rates of involvement with law enforcement underscores further the pressing need for additional addictive disorder treatment services.

Little support was found for the existence of systems-related barriers to services based on the assumption that these children were identified initially as having a MH disorder and, therefore, were being served in nonintegrated mental health or public educational systems, which were not co-coordinating a full array of services from the alcohol or drug treatment systems. Perhaps some support for system-based barriers may be interpreted from two of the findings during the 18-month period beginning at Wave 4. Reductions in needed services for children having co-occurrence were seen in one mental health (psychotropic medication) and one educational (special education classes) service consistent with a system-based service reduction. However, one limitation of the current study is that the existing database does not provide complete information on which service system and what service model provided the obtained services. Therefore, no firm conclusions can be drawn from these data with regard to service use from a specific system or delivery model. Moreover, alternative explanations of these data exist. For example, fewer special education classes and reduced use of psychotropic medication might just as easily be reflecting higher levels of criminal justice involvement rather than exclusionary policies of the alcohol or drug treatment system.

Another limitation of the current study is that the existing data were restricted to dichotomous indicators of service use (i.e., yes/no) with no information on service effectiveness. Although this exploratory study provided data on whether children *ever received at least one* episode of a service, no fine-grained frequency or duration measures of service use were available, which are important dimensions of service use. Potentially even more significant was the absence of service effectiveness measures, which provide data on the utility of receiving a service. Somewhat paradoxically, receiving more services may not indicate better services, as, at least theoretically, one episode of a highly effective service may provide more benefit than numerous episodes of ineffective treatment.

Future research should utilize databases that incorporate both more fine-grained measures of service use and outcome measures that are related to service effectiveness. Specifically, among existing databases, there are at least two types that have potential for providing more comprehensive comparisons of service use between adolescents with and without comorbidity. The first type are those

databases that have been collected to compare children's integrated systems or systems of care services to the more traditional stand-alone service systems model. The National Evaluation of the Comprehensive Community Mental Health Services for Children and Their Families Program conducted by Macro International (E. Wayne Holden, Principal Investigator) provides a good example of this type of database. Using a matched pairs longitudinal design, MACRO has paired five selected system of care demonstration sites with five matched (on community, child, and family variables) comparison sites. Each set of paired sites provides a quasi-experimental comparison of children with serious emotional disturbance under either an integrated or traditional service system. During a 24-month period, for each child, service data has been collected on type, duration, and costs. Additionally, diagnosis and outcome measures (e.g., children's problems, functional behavior) have been collected. Therefore, it would be possible, by splitting the sample into those with and without comorbidity, to explore overall differences between these groups with regard to type, frequency, and costs of services. Moreover, any interactions with type of service system model (i.e., system of care/traditional) can be examined. Tests of these interactions would address directly the question of whether service use patterns for the comorbid are improved, unchanged, or reduced under an integrated service system.

The second type of databases are statewide administrative databases such as Medicaid eligibility and claims records, public behavioral health events, and HMO encounters. Typically, data are collected at the person-level and include information on diagnosis, eligibility status, type; location; and cost of service received, gender, and race/ethnicity. For example, in the State of Florida, children's diagnoses, service use, and cost data are available for all children's mental health, physical health, and substance use services received by Medicaid participants. Comparisons between the comorbid and those with only a MH disorder can be made using the Florida Medicaid Claims files and the statewide public behavioral health files. Recent analyses of these databases conducted at the de la Parte Florida Mental Health Institute, the archive facility for the State, examined the types of services, duration, access to care, and cost among various types of recipients (e.g., consumer characteristics such as managed care plan membership or being seen by a particular service provider). Similar analyses could be performed for adolescents with and without co-morbidity. Using either of these database types, future research could

provide a more comprehensive assessment of how service use patterns differ, or not, between adolescents with co-occurrence versus their MH only peers.

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Table 1
Relative Frequency of Participants With a Single or Co-Occurring Disorder Receiving
Various Services During the 18-month Period From the Wave 1 Assessment

Service	Disorder Group		Adjusted OR
	Co-occurring MH and SU (\underline{n} = 120)	Only MH (\underline{n} = 437)	
Psychological testing	42.9	45.3	
Individual counseling	91.7	84.9	
Family counseling	59.3	52.2	
Group therapy	46.0	37.3	
Alcohol & drug counseling	43.7	>	12.8 3.20
Special education classes	78.2		89.9
Speech therapy	6.7		15.7
Vocational rehabilitation	3.7		3.7
Psychotropic medication	34.6		35.3
Nonroutine health care	50.0		36.0
Contact with law enforcement	66.7	>	36.5 2.37

Note. MH = mental health, SU = substance use, OR = odds ratio, > = greater than at $p < .05$.

Table 2
Relative Frequency of Participants With a Single or Co-Occurring Disorder Receiving
Various Services During the 18-month Period From the Wave 4 Assessment

Service	Disorder Group		Adjusted OR	
	Co-occurring MH and SU ($n = 120$)	Only MH ($n = 363$)		
Psychological testing	35.3	41.5		
Individual counseling	43.1	54.8		
Family counseling	23.5	33.9		
Group therapy	35.3	39.7		
Alcohol & drug counseling	30.4	>	16.4	2.58
Special education classes	55.8	<	83.1	2.70
Speech therapy	8.5		14.1	
Vocational rehabilitation	5.0		2.7	
Psychotropic medication	13.7	<	27.1	2.14
Nonroutine health care	54.9		57.0	
Contact with law enforcement	67.6	>	56.4	1.72

Note. MH = mental health, SU = substance use, OR = odds ratio, > = greater than at $p < .05$,
 < = less than at $p < .05$.

Table 3
Relative Frequency of Participants With a Single or Co-Occurring Disorder Receiving
Various Services During the 6-year Period From the Wave 1 Assessment

Service	Disorder Group		Adjusted OR
	Co-occurring MH and SU (<u>n</u> = 196)	Only MH (<u>n</u> = 472)	
Psychological testing	51.5	63.3	
Individual counseling	85.7	85.4	
Family counseling	67.3	61.2	
Group therapy	56.6	54.9	
Alcohol & drug counseling	54.1	> 27.1	3.09
Special education classes	76.0	86.0	
Speech therapy	10.2	21.4	
Vocational rehabilitation	11.7	9.1	
Psychotropic medication	36.7	44.5	
Nonroutine health care	71.9	67.4	
Contact with law enforcement	81.1	> 65.5	2.13

Note. MH = mental health, SU = substance use, OR = odds ratio, > = greater than at $p < .05$.